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No. III.

MACHINE FOR ERADICATING THE STUMPS
OF TREES.

*The GOLD CERES MEDAL was this session awarded to
J. MACKAY, Esq., of Pictou, Nova Scotia, for a
Machine for eradicating the Stumps of Trees.*

SIR,

Pictou, Nova Scotia, Dec. 15, 1823.

IN consequence of a notification in the Gazette of this province, that the Society of Arts in London have offered a premium to the person who shall invent and discover to the Society the best method, verified by actual experience, of raising out of the earth and removing the stumps and roots of trees, which have been left after felling the timber, I have been induced to communicate to you the following mode, which I trust you will have the goodness to communicate to the Society.

As in the clearing of woodland the extirpation of stumps and roots is the most laborious part of the process, it has, of course, been the subject of much attention in this quarter of the globe. In British America the ordinary method of clearing land is, to allow the stumps to remain for a number of years, according to their size. During this period the smaller fibres gradually decay, and the root itself is each year removed a little from its original position by the intensity of the frost. When the farmer

judges that time has so far produced decay as to render the removal of the stumps and roots practicable by the usual means, he pitches upon the spring of the year, when the soil has been loosened by the returning heat, and with the assistance of four or five men and a couple of pairs of oxen he effects his purpose. The oxen are fastened by a chain to the top of the stump, and when the removal of it exceeds their strength, the men are employed in aiding them by levers, or in cutting off the larger roots, which are afterwards taken out by themselves. Here it may be observed, that though the softness of the ground produces a considerable saving of power, there is much lost on the part of the oxen from their want of a firm footing, and also in the lever, as a very small pressure forces its fulcrum into the soil. Besides, it frequently happens, that the fulcrum, by resting upon the roots, deprives the lever of much of its power.

The block and tackle have been sometimes employed, but their use is both laborious and expensive. I at one time imagined that a purchase-cart, such as is employed in his majesty's naval yards, might be used with advantage. It is, however, in no respect different from the lever; and in the spring, when the ground is soft, the sinking of the wheels would render it inconvenient. The following is, I believe, the cheapest and most effectual method which has yet been employed in this part of the world.

In 1821 I had purchased a field of ten acres, from which, in the course of the winter, I cut down and removed the timber. As it was a natural forest, the trees of course were of various sizes: the largest, I think, were about thirty inches in diameter. Having at that

time a ship's winch in my possession, it occurred to me to use it for clearing my field, and the result far exceeded my expectations. With the assistance of four men I found myself able to raise, on an average, eighty stumps a day, and with them every root which could impede the progress of the plough. After they are removed from their bed they must be, in the ordinary way, cleared of the adhering earth, collected into piles, and destroyed by burning. Mr. David Creighton, a gentleman of this place, encouraged by my success, was induced to adopt the same mode, and in the space of six days cleared a field containing three acres, in which the timber was such as I have previously mentioned. This method, I am satisfied, might be generally used with advantage. The expense of the whole apparatus does not exceed twenty pounds, and with moderate care it would last as many years.

In clearing my field I pitched upon a piece about the size of an acre, into the middle of which I brought the winch, and fastened it to the largest stump. From the barrel of the winch a chain proceeded, which extended to the farthest stump in the piece: this was of the size usually attached to a winch when it is used in vessels. I had also provided myself with a number of shorter chains, having each a ring at one end and a hook at the other. By passing the hook through the ring, these were fixed upon the stumps nearest to that to which the chain of the winch was attached, and when it was raised these chains were in succession hooked to the leader, so that the winch was employed, without interruption, till the nearest stump was extracted. In clearing my field five hands were engaged; two at the winch, two in fixing the

chains, and one at the stump to be raised. When the stump was large, those who attended the chains occasionally assisted in turning the winch. I would only further observe, that where stumps are of a large size, what is commonly termed a snatch-block might be used with advantage.

I am, Sir,

A. Aikin, Esq.

Secretary, &c. &c.

&c. &c. &c.

JOHN M'KAY.

CERTIFICATES.

Pictou, Dec, 15, 1823.

I do hereby certify, that I have used the winch with much success in clearing my field, having taken out in one day, with the assistance of four men, more than I could do with twenty men in the same time, and upon the old principle. With four men, in the space of six days, I completely cleared three acres of land, where the stumps were large and numerous, many being upwards of two feet, and very few less than one foot in diameter. The above I am willing to certify upon oath, if required.

DAVID CRICHTON.

WE, the subscribers, do certify unto all whom it may concern, that we have witnessed the success of John M'Kay, Esq. in raising and removing stumps by means of the winch, and we conceive it to be the most effectual method with which we are acquainted. We are also

satisfied, that five or six men will in this manner raise and remove more stumps than twenty would by the mode usually adopted in this country.

HUGH DENOON,
 GEORGE JOHNSTON,
 JAMES KILLEL,
 DAVID CRICHTON,
 JOHN W. HARRIS,
 WILL. RANKINE,
 GEO. CAMPBELL,
 JOHN TAYLOR,
 DAVID UNDERWOOD,
 WILLIAM CORBET.

Province of Nova Scotia, }
 Halifax. } I, Samuel George William Archibald, notary public, duly admitted and sworn, dwelling at Halifax, in the province aforesaid, do hereby certify unto all whom it doth or may concern, that the names Hugh Denoon and George Johnston, to the foregoing certificate subscribed, are of the proper handwriting of them the said Hugh Denoon and George Johnston, and that they are two of his majesty's justices of the peace for the district of Pictou, in the province aforesaid; and that all faith and credit is due to their acts and attestations.

In witness whereof I have hereunto my hand and seal of office subscribed and set, at Halifax aforesaid, this 26th day of December, 1823.

G. W. ARCHIBALD,
Notary Public.

*Reference to the Engraving of Mr. John M'Kay's method
of removing Stumps and Roots of Trees.*

PLATE XVII. fig. 1. *aa* the two winch handles of the frame *bb*, which is chained to the largest stump *c*. *dd* the leading chain, proceeding from the barrel to a distant stump *e*. The stump *f* has just been raised, and the chain removed to the stump *e*, which is in the act of being raised (as much chain as pulled up the former stump remains round the barrel). *g* a shorter chain round the stump *h*, to be hooked on to the leading chain *dd* as soon as it has raised the stump *e*, and has been disengaged from it, so that the different stumps are raised in succession, from the farthest to the nearest. The winch is then moved to face the next portion, and the chain again extended to the farthest it can reach, while the shorter chains are attached to the right and left stumps, and hooked on in succession to the leading chain, and thus continued till a whole circle round the winch has been cleared. Should the stump to which the winch is attached be liable to give way, it will be requisite to lash it to one or two in the rear, to secure the purchase.

Fig. 2 shows a bird's-eye view of the end of the chain *dd*, secured to a stump with two short chains *gg*, secured to neighbouring stumps ready to be hooked on.